

cost-based rates have not deterred efficient investments. To the contrary, the evidence is that CLECs made far greater investments than were in fact warranted under the subsequent developments in the industry.

B. The Restrictions That The Commission Has Imposed On UNEs Have Caused Or Contributed To The Difficulties Of Switch-Based CLECs.

98. But the market experience does more than show that the unrestricted availability of UNEs at cost-based rates did not prevent billions of dollars of investments by CLECs. A major factor that contributed to the subsequent underutilization of CLEC facilities, and of the subsequent CLEC bankruptcies and business difficulties, were the restrictions that the Commission imposed and that limited access to UNEs. In each instance, the Commission acted at the behest of ILECs. In each instance, the Commission was responding to narrowly perceived problems or set of data without considering the full array of factors that cause them or the ways in which ILECs could exploit the resulting exceptions to impede the CLECs' ability to operate.

99. In particular, the ability of CLECs profitably to use switches that they deploy depends on the revenues that could be earned under the Commission's rules and on the costs that would be incurred in light of the measures that the Commission and other regulatory bodies would take to prevent ILECs from imposing unreasonable or discriminatory costs. Revenue sources that the CLEC potentially had available included (1) revenues from access charges and other services that could be efficiently offered using their own switches and ILEC-provided loop and transport facilities and (2) reciprocal compensation revenues on ISP-bound traffic, which resulted from an arbitrage opportunity that ILECs' conduct had created. CLECs' costs, in turn, were critically affected by their ability to use

incumbent-provided loops and transport, including EELs (which eliminate the CLEC's need to collocate in each office where they lease unbundled loops) and by costs and operational procedures used to effect "hot cuts" and otherwise to connect loops to CLEC facilities to serve the customer over its deployed switch is by using UNE-P initially and later moving the customer to the switch through some other device.

100. But, during the last three years, the Commission took actions that deprived CLECs of revenues that could support their switches and that prevented them from delivering traffic to their switches at economical costs. In each instance, the Commission acted at the behest of ILECs who offered different and narrow reasons for the changes in the Commission's rules. But the ILECs exploited the change to create conditions that contributed to the underutilization of the CLECs' switches and to their revenue shortfalls.
101. First, in the wake of the *UNE Remand Order*, the Commission imposed severe restrictions on the CLECs' right to use EEL loop-transport combinations that not only prevent them from offering stand-alone special access to long distance customers, but also effectively prohibit use of EELs to connect local customers to their switches. First, this effectively imposed limitations on the economic use of switches that had been deployed, for it meant that CLECs could not use their switches to serve any individual customers unless they incurred the costs and delays of collocating in the office where the customer's loop terminates – which, as the *UNE Remand Order* found, itself is a material cost disadvantage. Second, it prevented CLECs from offering substitutes for the ILECs' special access services, which, I understand, are often double the price of a comparable EEL. The restriction on EELs thus prevented CLECs from offering services that would

drive ILECs' special access rates closer to cost, and that would have provided CLECs with revenues from switch-based service that would have supported their switching costs.

102. As I explain in more detail below, the Commission's restrictions on the CLECs' right to use EEL loop-transport combinations are misguided. Mechanisms that provide access to monopoly inputs at cost-based rates achieve their beneficial purposes only if entrants are permitted to exploit conditions where services are priced in excess of their economic costs. Pursuit of such "arbitrage" opportunities provides revenues that fund CLECs' operations, provides traffic that fills facilities that are deployed, and will, over time, drive ILEC prices closer to economic costs. Conversely, these benefits will not be achieved if the ILECs can successfully petition the Commission to eliminate arbitrage opportunities as they arise, for that will inevitably lead to the underutilization of CLEC assets, to less investment, and to less effective competition.
103. Second, also in the aftermath of the *UNE Remand Order*, the Commission responded to another ILEC petition to cut off another arbitrage and revenue opportunity: the CLECs' right to receive reciprocal compensation payments on ISP-bound traffic. These "arbitrage" opportunities had been created by the ILECs' successful efforts to set switching rates at high levels. While the high switching rates restricted the utility of unbundled switching (to the ILECs' advantage), it created an arbitrage opportunity for CLECs under the reciprocal compensation provisions of the Act – which require carriers who originate calls to pay the carriers who terminate calls at the TELRIC-based rates. By serving ISPs who receive calls, CLECs would be paid by ILECs for switching ISP-bound calls at the inflated rates. This opportunity plainly could not be sustained in the long

term, but it could provide revenues that would help support CLEC switch deployment during the periods before they could obtain traffic from other sources. By radically reducing reciprocal compensation on ISP-bound traffic, the Commission eliminated this source of CLEC revenue while letting the ILECs retain all the benefits of the excessive switching rates.²¹

104. Third, in the *UNE Remand Order*, the Commission prohibited CLECs from obtaining unbundled switching to serve customers with four or more lines in zone one offices of the largest 50 MSAs where the ILEC voluntarily offers EELs. While the EEL can facilitate the deployment of switches by CLECs, this carve out has prevented AT&T from offering any competitive option to customers who qualify for the carve out. The reason is that the vast majority of these customers are served by voice grade loops that require hot cuts, which have proven so fraught with delays, added costs, and inefficiencies that CLECs do not put a new customer on their switches initially, but serve it through UNE-P and then seek to move thousands of customers in mass later. Thus, by barring the use of unbundled switching for customers who qualify for the carve out, the Commission's rule bars any competition for these customers. In addition, the ILECs have used the carve out for customers to frustrate the availability of unbundled switching more broadly – *e.g.*, by refusing to provide unbundled switching to single line customers that had four separate locations in the area and by requiring CLECs to litigate their entitlement to the UNE in

²¹ Those modifications of the reciprocal compensation requirement on ISP-bound traffic also eliminated one of the factors that had given ILECs' incentives to roll out DSL technology and aggressively to market DSL-based services to ISPs. This could have been an additional factor contributing to the ILECs' 2001 decisions to raise the price and reduce the output of DSL-based services.

this circumstance.

105. Finally, in the *UNE Remand Order*, the Commission imposed a restriction that denies CLECs practical access to the high frequency portion of any loop served by DLC – which, I understand, as noted, is a very substantial (over 25%) and growing percentage of total loops. It does so by requiring CLECs to access these loops by collocating in remote terminals which, as explained by AT&T engineering expert Mr. Joseph Riolo, is expensive and economically infeasible. See Riolo NGDLC Dec. ¶¶ 65-84. This prohibition denies CLECs the ability to offer the DSL-based data transmission and voice services that would provide additional revenues and help support the facilities investments they have made, or otherwise would make.

C. Conditions Relatively Favorable to CLEC Activity, Including Lower UNE-P Prices, Have Not Suppressed ILEC Investment, And Indications Are That They Have Led To Greater Investment By ILECs As Well As More CLEC Activity.

106. There is no evidence that UNE-P availability has detracted from the rate of facility investment. To the contrary, there is evidence that suggests that effective UNE-P competition leads to greater facilities investment by CLECs and by ILECs. In this regard, because of high rate levels as well as the unavailability of reliable OSS, competitive local service based on the UNE-P has only been aggressively pursued in a handful of states to date. AT&T initially used UNE-P to serve residential customers only in New York and Texas (and has since done so in Georgia and Michigan), and of the states where the Commission has found OSS to be operational or where a § 271 application is pending, there are only five states in which UNE-P accounts for more than

2% of switched access lines (New York, Texas, Georgia, Pennsylvania and Missouri).²²

Excluding cable-based competition, the data show CLEC facility investment is highest per line in these states.

107. For example, although California is the nation's most populous state, AT&T has made greater investments in New York (where there is effective availability of UNE-P for residential service) than in California (where there is none). *See* Leshner-Frontera Dec., Part II.D.
108. There also is evidence that suggests that ILECs understand that effective UNE-P competition will lead to more effective facilities-based competition and that, in anticipation of this competition, ILECs invest more in states where there is or could be relatively more effective UNE-P competition than they do in other states. For example, based on an examination of states where the Commission has found OSS to be operational or where a § 271 application is pending, ILEC investment rates for 1999 and 2000 (the last two full years for which data are available) indicate that the three states with the highest ILEC investment rates were Georgia, Texas and New York, the three states with the highest levels of UNE-P entry.²³ This trend continued in 2000: the ILEC

²² *See* NYPSC Local Competition Report (available at www.dps.state.ny.us/telecom/e-summary.htm); AT&T Texas Section 271 Comments, Supp. Declaration of A. Daniel Kelley and Steven A. Turner, CC Docket No. 00-65, at 3-4, Tables 1 & 2 (filed Apr. 26, 2000); AT&T Massachusetts Section 271 Comments, CC Docket No. 01-9, at 76, Table 1 (filed Oct. 19, 2001); AT&T Pennsylvania Section 271 Comments, CC Docket 01-138, at 71, Table 1 (July 11, 2001); AT&T Missouri Section 271 Comments, CC Docket 01-88, at 93, Table 3 (filed Sep. 10, 2001).

²³ The ILEC investment amounts were taken from ARMIS Form 43-02, Table B6, Column C ("Telephone Plant Additions"), which measures additions to TPIS (telecommunications plant in service), net of amortized tangibles and intangibles. The per-line calculation above is based on
(continued . . .)

investment rate in Georgia and Texas exceeded that of any state with low UNE-P entry, and the investment rate of Verizon in New York, a state with very high UNE-P entry, was exceeded by a trivial amount only by the ILEC in Missouri (65 cent per line differential).

109. The contrast between Georgia and Massachusetts is striking. Georgia and Massachusetts have roughly comparable population sizes, and each has a major business center with a high technology corridor (Atlanta and Boston). Yet, these states have widely disparate ILEC investment rates: in 1999, the ILEC in Georgia, a state with relatively high UNE-P entry, invested \$218.71 per line in new telecommunications plant and equipment, as compared with only \$145.03 in Massachusetts, a state with virtually no UNE-P entry. This disparity grew even more significant in 2000, when the ILEC in Georgia invested \$266.85 per line, whereas the ILEC in Massachusetts invested only \$145.03 per line. *Id.* Moreover, whereas the ILEC in Georgia increased its per-line investment by 22% between 1999 and 2000, the ILEC in Massachusetts increased its per-line investment by only 7.37% during the same period.
110. Finally, in order to test the possibility that ILEC investment rates in Texas and New York – two of the states with high UNE-P entry – are skewed by the fact that both states are large, highly populous states with attractive markets, we looked at an additional piece of evidence. I compared the ILECs' investment rates in those states with Pacific Bell's investment rate in California, another large, populous state with attractive markets.

(. . . continued)

the number of switched access lines, drawn from ARMIS form 43-08, Table III ("total switched access lines").

Significantly, the trend I observed in the 13-state comparison held true with the addition of California. The ILEC investment rate in California – a state with relatively high UNE rates and no UNE-P entry – is far lower than the ILEC investment rates in New York and Texas.²⁴ Indeed, the ILEC investment rate in California for 2000 was lower than any of the other states we examined, notwithstanding the fact that facilities-based investment by CLECs in California is relatively high. Again, this anecdotal evidence suggests that UNE-P entry is a more significant impetus to ILEC investment than facilities-based entry, presumably because UNE-P entry makes it possible for CLECs to enter on a widespread, accelerated basis that puts competitive pressures on the ILECs.

111. This set of comparisons has so far been based on anecdotal differences. The hypothetical proposition that entry-accommodating pricing of UNEs discourages ILEC facilities investment may be investigated rigorously by means of an econometric analysis of the relationship between UNE pricing and the pace of ILEC facilities investment among states. According to the point of view advanced by the ILECs, their own investment in facilities should be seen to have an increasing relationship with the prices of UNEs across states. By this way of thinking, higher UNE pricing discourages entry by non-facility based CLECs, frees the ILECs from anticipation or just anxiety that their investments in facilities will be appropriated by CLEC providers, and thereby stimulates or induces the ILECs to greater investment. On the other hand, the contrary hypothesis implies a

²⁴ For Texas, the investment rate for 1999 was \$176.51 per line and the investment rate for 2000 was \$226.74 per line. For New York, the investment rates for 1999 was \$152.79 per line and the investment rate for 2000 was \$184.52 per line. Finally, the investment rate in California for 1999 was \$124.19 per line and the investment rate for 2000 for \$135.88 per line.

negative relationship between UNE pricing and ILEC facilities investment. According to this line of reasoning, lower UNE pricing promotes CLEC entry, and the prospect of increased competition from CLEC providers induces ILECs to make defensive investments in additional facilities so as to be in a better position to compete.

112. Thus, the two hypotheses yield opposing predictions about the direction of the relationship between UNE prices and ILEC facilities investment, and it might well be the case that study of applicable data could determine whether either hypothesis were borne out or were subject to rejection. Of course, these opposing predictions should be understood to refer to the direction of the relationship between UNE pricing and ILEC facilities investment *taking into account the effects of other determinants of the level of ILEC investment*. Further, any finding on the relationship between UNE pricing and ILEC investment would be much strengthened in its interpretation for the issues at hand if the UNE pricing and other factors that seem to be relatively conducive to competition were seen in the same data set actually to be associated with greater levels of CLEC activity, again with other influences taken into account. To explore these possibilities and to test the hypotheses, I – with the assistance of Dr. John Bigelow, Dr. William Lehr, and Dr. Stephen Levinson – have carried out an econometric analysis of the relationships among levels of ILEC facilities investment, the numbers of active CLECs, UNE prices, and a variety of other general and telecom-specific factors that economic theory identifies as potential determinants of levels of ILEC investment and CLEC activity across the states. The details of this analysis are set forth in Exhibit 2 and the results are set forth in Exhibit 3.

113. Specifically, we have gathered cross-section data by state on the amount of ILEC investment between the end of 1996 and 2000, UNE-P pricing, the number of registered CLECs, the total service resale discount from retail rates, population growth, unemployment rate, base level of ILEC capital per capita, and the share of the labor force employed in industries that make extensive use of telephone services. In addition, we have collected data on the revenues that are earned by telephone local service providers in each state, a TELRIC measure of the costs of providing local service, as well as data that describe the regulatory regime in a state.²⁵
114. The effect of UNE pricing on ILEC investment will, according to economic theory, be felt through a set of interlocking relationships. Economic theory teaches that ILEC investment will be influenced by its impact on ILEC profitability. That is, ILEC firms will choose investment levels to satisfy their own profit objectives.²⁶ The effect of UNE pricing on ILEC profitability, and hence on ILEC investment, is necessarily indirect. UNE prices affect ILEC profitability by affecting the extent of CLEC entry and competition, which, in turn, directly affect ILEC profitability.
115. Econometric methodologies suggest two approaches to investigating such a relationship.

²⁵ States vary in the extent to which provision of telephone services is deregulated. See Communications Daily White Paper, *States' Retail Regulation of Local Exchange Providers* (March 26, 2002). In some states ILECs' telephone service is largely deregulated, whereas in others it is partially deregulated, perhaps with price caps or rate freezes, while in some states traditional rate of return regulation continues. These variations in regulatory regime may exert influences over ILEC investment.

²⁶ In the long run, the goal is to maximize profit, appropriately discounted for the time value of money. In the shorter run, and especially in complex market or strategic environments the apparent goal may be more complex.

One can estimate the parameters of what is known as a “reduced form” relationship. The idea behind this approach is that certain variables, such as the level of ILEC investment and the level of CLEC competition, are determined together, *i.e.*, simultaneously, by a system. The estimation technique recognizes that when all the relationships internal to the system are taken into account, the (endogenous) variables determined by the system, in our case primarily ILEC investment and the level of CLEC activity, will be mathematical functions of the (exogenous) variables determined outside the system, in our case the state-wide determinants of demand for telecommunications and for telecommunications infrastructure growth, the UNE prices, the levels of local service costs and revenues, and the character of the regulatory regime. Because the approach has reduced the operation of the simultaneous system to a simple mathematical relationship, that relationship is known as a “reduced form.”

116. Alternatively, one can estimate the parameters of the relationships that make up the internal structure of the system. The estimation of such “structural form” relationships is statistically more complex because care must be taken to ensure that the simultaneous nature of the relationships does not lead to the inadvertent introduction of statistical bias in the estimation process.
117. The two approaches have their comparative strengths and weaknesses. On the one hand, the reduced form approach has the virtue of simplicity. A single reduced form relationship can arise from a variety of different structural systems. Therefore, reduced form estimation is not sensitive to particular assumptions about the structural nature of the underlying system. On the other hand, it is often good econometric practice both to

ensure that the specification of econometric models is grounded in reliable economic theory, and to examine econometric results not only for their purely statistical properties, but also for the desiderata of quantitative and qualitative consistency with the predictions of economic theory and the assumed rolls of the elements of the system. Structural estimation lays bare more of the underlying economic relationships, and so is more amenable to confirmation (or disconfirmation) along these lines.

118. Here, as described in greater detail in Exhibits 2 and 3, we employ both methodological approaches in a complementary fashion. We have estimated a reduced form relationship in which ILEC investment in a state over the period from 1996 to 2000, scaled for the size of population, depends on telecommunications demand factors, the rate of population growth, the baseline per-capita value of the ILEC's state-wide plant in service, and the regulatory regime.²⁷ Investment is also permitted to depend on average revenue per residential subscriber, the total service resale discount factor, a measure of the level of UNE-P pricing in the state and a TELRIC measure of the cost of providing local exchange telephone service. The results indicate that population growth exerts statistically significant positive effects on ILEC investment in the direction predicted by economic theory.²⁸ Similarly, the TELRIC measure exerts a statistically significant negative effect on investment, as predicted by economic theory because the TELRIC measure of cost, if it is estimated correctly, is the cost to the ILEC of providing local

²⁷ This relationship is estimated using an econometric technique known as ordinary least squares.

²⁸ The statement that the effects are statistically significant means that the probability that the observed effect is due to chance rather than a systematic effect has been calculated to be below a pre-specified low threshold.

service. Some of the forms of the state-specific regulatory regimes are statistically significant factors in explaining the differences among the states' levels of ILEC investment over the late 1990s.

119. In the context of these effects, the UNE-P price shows a negative effect on ILEC investment that is nearly statistically significant according to the usual professional standard.²⁹ In other words, the econometric results provide support just short of full statistical significance for the hypothesis that easing CLEC entry with relatively low UNE-P prices *encourages* ILEC investment. At the same time, the econometrics establish at the standard 5% level of statistical significance the rejection of the contrary hypothesis advanced by the ILECs that easing CLEC entry with relatively low UNE-P prices discourages ILEC investment.
120. Following the complementary approach, we have also jointly estimated structural form relationships to explain both ILEC investment and CLEC activity level.³⁰ Here, any impacts of UNE-P prices or the total service resale discount rate on ILEC investment are felt through their impacts on state-specific CLEC activity, which is among the direct influences on ILEC investment. ILEC investment is also permitted in the specification to be influenced by state-specific demand factors, TELRIC measures of costs, and the other variables listed above in the description of the reduced form. The available data on the

²⁹ The effect is statistically significant at the 6% level. Thus, if the threshold for statistical significance is the conventional 5%, this effect just fails to be significant. At the 10% level, which is sometimes employed in statistical work, this effect is significant.

³⁰ These relationships are estimated, because of simultaneity, using three stage least squares.

level of CLEC activity were the numbers of CLECs registered to offer service in each state. Although it is clear that not all of the registered CLECs are equally active or even necessarily active at all in marketing to the population of the state, it is a plausible hypothesis that ILEC investment decisions would be influenced by the number of registered CLECs in as much as their registration is typically perceived as an expression of possible interest in actively competing. The level of CLEC activity in its own structural relationship is permitted to depend on demand factors, UNE-P prices, the total service resale discount rate, and the average revenue per residential subscriber.

121. The joint estimation of this system of two interrelated structural equations yields strong results that confirm and strengthen the findings from the reduced-form estimation. Here, higher UNE-P prices discourage CLEC entry into states' local telephone markets. The effect is negative and statistically significant.³¹ Also, greater total service resale discounts stimulate CLEC activity with a statistically significant effect. In the ILEC investment relationship, the number of CLEC entrants exerts a positive effect on ILEC investment at the 1% level of statistical significance. Thus, ILEC investment is stimulated, controlling for other influences, by greater CLEC activity, and CLEC activity is in turn positively responsive to lower UNE-P prices as well as to deeper total service resale discounts. These effects are all statistically significant, indicating that it is environments conducive to CLEC activity that stimulate ILEC investment, and that state environments that are discouraging to CLEC activity result in suppressed levels of ILEC investment. In particular, these econometric results clearly reject the hypothesis asserted

³¹ This effect is statistically significant at the standard 5% level.

by the ILECs that relatively low UNE-P prices stifle ILEC investment.

122. In short, there is no basis for the ILECs' assertion that UNE-P and UNEs discourage investment by ILECs or CLECs. Indications are that the effect is precisely the opposite, and that effective UNE-P competition leads to greater investment by ILECs as well as by CLECs.

VII. THE COMMISSION SHOULD RETAIN THE EXISTING NATIONAL MINIMUM LIST OF UNEs BUT ELIMINATE RESTRICTIONS THAT LIMIT ACCESS TO SWITCHING, TO EELS, AND TO NGDLC LOOPS.

123. Against this background, I believe the most appropriate course for the Commission is to retain the existing national list of UNEs and to eliminate the use and other restrictions that apply to them. Otherwise, CLECs will be "impaired" both in providing service now and in making broader facility investments in the future.
124. Preliminarily, the *UNE Remand Order*, in my view, set forth an appropriate standard for determining impairment. It recognizes that the appropriate inquiry is whether multiple CLECs who do not obtain a UNE from an ILEC are now profitably providing – or could now profitably provide – the same quality services to the same classes of customers as the ILEC. However, because of the difficulties of making that determination directly, the Commission considers whether a CLEC that was required to obtain the UNE from outside the ILECs' network would incur materially greater costs than the ILEC, would be materially delayed in providing service to particular customers, would be forced to offer a service of materially lower quality, would be prevented from offering a service that is as ubiquitous as the ILEC, or would encounter significant operational problems or other costs. *UNE Remand Order* ¶¶ 48-99. The Commission also recognized that a critical

factor in deciding whether exceptions should be established on the availability of particular UNEs is whether that would have the effect of materially increasing CLECs' costs by requiring them to incur additional transactional and litigation costs to use UNEs or subjecting them to the risks that they will be denied UNEs that are in fact necessary for them to provide service competitively in particular conditions. *Id.* ¶ 366.

125. The *Notice* (¶ 19) inquires whether the Commission should give less weight to cost than to other factors. As an economist, that suggestion strikes me as curious. All the forms of disadvantage on which the Commission has focused can be expressed as cost differences and the “non-cost” service disadvantages that the Commission has identified (*e.g.*, timing and quality) can be overcome only by incurring materially greater costs than the ILEC or by charging materially lower prices. So it is my view that the determination of whether there are material cost differences is inherently central to the Commission’s task.
126. The Commission also asks whether it should make its rules more “granular” by restricting or eliminating the obligation to make UNEs available in particular conditions. In principle, there is nothing wrong with creating exceptions to the requirement that UNEs be made available if the exception corresponds to generic conditions in which UNEs are competitively available and in which multiple CLECs are in fact efficiently providing service without obtaining the UNE from the ILEC. But where it is the case that there are no such conditions, and that UNEs are generally necessary, “granular” attempts to micromanage the circumstances in which UNEs are available serve no substantial purpose; indeed they seem certain to produce substantial harm.
127. Thus, the existence of certain amounts of “overbreadth” in the rules governing the

availability of UNEs simply should not concern the Commission, for there is no basis to believe it will impair the objective of encompassing facilities based competition or any purpose of the Commission. As noted, CLECs already have significant incentive to use their own facilities (and disincentives to rely on UNEs). Thus, they will use other sources of supply as soon as it is economically and technically feasible to do so at costs close to those incurred when they obtain UNEs from ILECs. Conversely, rules that prevent competitors from using UNEs when there are no viable alternatives to prevent competition that is beneficial, prevent full utilization of facilities that have already been deployed by CLECs, and therefore prevent or impede future facilities-based competition. Such rules further permit ILECs to raise their rivals' costs by litigating competitors' entitlement to a UNE case-by case. Therefore, before any exception is created, the Commission should be certain (1) that there are a set of generic conditions under which multiple CLECs can provide service profitably to an entire class of relevant customers without any use of the UNE and (2) that these conditions can be expressed as a self-executing rule that prevents ILECs from engaging in case by case litigation.

128. In my view, the first condition can be securely found to exist only if actual market experience in a defined area establishes that multiple CLECs have successfully been providing such services to the relevant customers without use of UNEs over sustained periods of time *and* that facilities in sufficient volumes to meet needs of multiple CLECs are currently available at wholesale from sources other than the ILEC. Because of the broad array of factors that can affect a CLEC's ability economically to offer service through self-provisioned facilities, only marketplace experience can demonstrate whether

and when these conditions exist. It cannot be securely deduced by the Commission from inferences from other evidence, from studies or models that purport to show that it will generally be economic to self-provision facilities, from studies or claims that the conditions that allow economic use in one circumstance apply universally, or from the Commission's intuitive notions that CLECs will be able to overcome inherent cost disadvantages if they receive certain other rights.

129. The experience with the *UNE Remand Order*'s carve out from the unbundled switching requirement illustrates that the Commission cannot determine conditions in which facilities can be self-provisioned by extrapolating from limited data or by making predictions about the significance of particular facts. There, the Commission adopted a rule allowing ILECs to bar CLECs from using unbundled switching to serve customers that have four or more lines and are located in zone one offices of the largest 50 metropolitan statistical areas ("MSAs"), provided that EELs are available. The Commission relied on the fact that significant numbers of switches had been deployed in these areas by CLECs, but the Commission pointedly noted that there was no basis for concluding that any of these CLECs were operating profitably and that the Commission had no basis to find that "self-provisioning of switches is economically viable in the long run." *UNE Remand Order* ¶ 256. To the contrary, the Commission found that even where CLECs have achieved sufficient volumes to operate their switches at unit costs comparable to ILECs, the costs of collocation, the costs and service problems of hot cuts, and the costs of distance sensitive transport meant that a CLEC incurred materially higher costs than would a UNE purchaser or the ILEC. However, the Commission essentially

predicted that if CLECs were entitled to use EELs (which eliminate the need to collocate in every office), it would offset enough of those extra costs to allow the CLECs to operate profitably through self-provisioned switches. *See UNE Remand Order 297*. This prediction had no empirical basis in actual marketplace experience, and this prediction proved to be incorrect. For example, virtually all such customers are served with voice-grade loops that require hot cuts, and it has proven impossible economically to market service when hot cuts occur. *See generally* Brenner Dec.

130. Second, even where there is marketplace experience that multiple CLECs have profitably provided service through self-provisioned facilities over sustained periods of time, a restriction on a UNE's availability should not be imposed if it could allow the ILEC to engage in litigation or other conduct that would increase the CLECs' costs and thereby jeopardize the ability of multiple CLECs to provide alternatives to ILEC services. Any attempt to limit the general availability of a UNE – whether it be by the use of the facility, the nature of the customer served by the facility, or the status of the requesting carrier – forces the Commission to establish borders between permissible and impermissible circumstances in which a UNE may be used. By definition, establishing such borders encourages ILECs to argue for a line that minimizes the availability of UNEs to CLECs and requires carriers that wish to use UNEs to gather information that demonstrates their entitlement to the UNE. But worst of all, these type of “use” restrictions encourage ILECs to litigate over whether particular “uses” are permissible – during which time access to the UNE in question is withheld.
131. The Commission's *UNE Remand Order* recognized this point:

We believe . . . that the benefits of uniform . . . unbundling outweigh the costs of creating a patchwork regime in which incumbent LECs would likely seek to litigate . . . unbundling obligation [in particular circumstances]. As we stated above, unbundling requirements that provide uniformity and certainty to the market will allow new entrants and fledgling competitors to implement national and regional business plans and attract capital investment. Litigation over the incumbents' unbundling obligations requires the parties to these agreements and the state commissions that approve them to expend vast amounts of time and resources and would impede the development of competition.

UNE Remand Order ¶ 366. The Order also recognized that any time the Commission draws an arbitrary line regarding entitlement to UNEs – rather than a rule based on a detailed examination of all the relevant economic, engineering and operational factors that determine impairment – ILECs have the incentive and ability to push the envelope and claim that CLECs' use of the UNE is impermissible. This strategy forces CLECs to litigate their entitlement to UNEs. And even if the ILECs' argument is ultimately rejected, it may persuade some of the state commissions or courts to adopt their position. But regardless of the ultimate outcome of many of these disputes, the ILECs understand that emerging UNE-based competition is very fragile. Thus, given the precarious financial condition of their competitors, the ILECs understand that they may be able to discourage entry entirely merely by dragging their heels on provisioning UNEs.

132. Under these criteria, the existing national list of UNEs should be maintained, and the existing exceptions and restrictions on access to UNEs should be eliminated. With respect to each element, there is no generic set of conditions in which multiple CLECs can economically provide service while obtaining a comparable alternative from outside the ILEC's network and no circumstance in which a rule creating an exception would not impose anticompetitive harms on CLECs.

133. *High-Capacity Loops.* I understand that there is little or no debate that copper loops that are used to serve residential and most business customers should continue to be made available as UNEs. However, I understand that ILECs have proposed eliminating high capacity fiber loops from the unbundling obligation on the ground that some CLECs have been able to self-deploy these facilities to large businesses in dense urban areas. But that fact is not remotely sufficient to establish the assertion that CLECs can generally deploy these loops economically and that they would not be impaired in providing service if access to ILEC loops were denied.
134. As noted above, there are multiple factors that can make it economic to construct a loop to serve one large business customer, but that would not apply to other customers. These include, among other things, the amount of traffic a customer is willing to place on a CLEC's facilities, proximity to a fiber ring, the customer's willingness and ability to make a multi-year commitment that will continue to apply during the substantial period in which loops are constructed, the availability of the necessary right-of-way, and whether a CLEC has access to a building. Further, even when conditions might permit construction of a loop, the incumbent may be able to undercut the CLEC's price or provide service faster because it can increase its existing capacity by simply adding electronics to the existing sunk loop. And in any event, construction requires substantial time and the CLEC is impaired in the interim without access to the UNE. The Commission thus correctly found in the *UNE Remand Order* (§ 184) "that some competitive LECs, in some instances, have found it economical to serve certain customers using their own loops suggests to us only that carriers are unimpaired in their

ability to serve those particular customers. This evidence tells us nothing about the customer the competitor would like to serve but cannot”

135. Hence, there should be no exception to the availability of the loop UNE. There is no generic set of conditions in which CLECs who do not have access to high capacity UNE loops can economically provide service to the customers who require such loops. And to attempt to create an exception on any other basis would allow ILECs to engage in case-by-case litigation that would suppress competition by raising the CLECs’ costs.
136. *Transport.* Similarly, there is no way to specify *ex ante* those point-to-point routes where CLECs can self-deploy fiber transport or obtain it from sources other than the ILEC. Even if it were possible to specify the capacity levels and other characteristics that allow alternative transport facilities to be economic exceptional routes, rights of way issues may preclude a CLEC from deploying transport. Further, I understand that the CLEC may not be able to obtain the necessary collocation arrangements because of lack of space at the central office, excessive up-front or recurring collocation charges, or because the ILEC has imposed other discriminatory terms and conditions on collocation. *See* Fea-Taggart Use Restriction Dec. ¶ 14.
137. *Switching And The Three-Line Limit In Zone One Of The Top 50 MSAs.* I have previously discussed the economic facts that can give CLECs inherently higher unit costs when they self-provision switching, the *UNE Remand Order*’s findings in support of the current rules, and the actual market experience under these rules. Based on these facts, the Commission should retain unbundled switching and eliminate the existing carve-out – with the possible exception of customers served in these areas by DS1 or higher capacity

loops which I understand can be cut over without hot cuts.

138. For the reasons that I have set forth above, CLECs are quite plainly impaired without unbundled switching in serving any customers that have voice grade loops. That is starkly the case with all residential customers, whom, as I understand it, no CLEC has yet even attempted to serve through self-provisioned switching. It is equally the case for all business customers with voice grade loops, for to the extent that CLECs have attempted to serve these customers through unbundled switching, there is no evidence that any competitors have ever been able to do so profitably. Indeed, the hot cut problem has caused AT&T to abandon its strategy of serving these customers exclusively through its own switches and begin initially using UNE-P.
139. Finally, the Commission will no doubt be tempted to conclude that CLECs are not impaired in serving business customers that use DS1 or higher capacity loops, that can be served using EELs, and that are located in the densest zone of the top 50 MSAs and to modify the carve-out so it applies only in this circumstance. I note that AT&T has previously stated that it could operate under such a carve-out. But while there is reason to believe that multiple CLECs might be able efficiently to serve such customers through self-provisioned switches, I am aware of no market experience that is sufficient to permit the Commission generically to so find. To the contrary, Dr. Clarke's analysis shows that CLECs are at a significant cost disadvantage in self-deploying switches in competition with ILECs. Clarke Dec., Part V. This is born out by the real world experience of CLECs. The uniform difficulties that CLECs have experienced in making economic use of self-deployed switches quite strongly suggests that CLECs cannot yet readily attain

sufficient volumes of customers to achieve scale efficiencies comparable to the ILECs and to offset the distance-sensitive transport costs that CLECs incur when they self-provision switches – but that ILECs do not. It appears that the ability of CLECs efficiently to provide switching for even these classes of customers may require that they use UNE-P to serve the customers initially and deploy their own switches to serve them only after the CLEC has first achieved the necessary volumes (or close to them) and has been able to deploy the switch (which requires, as I understand it, 6-12 months).

140. The Commission should not have the slightest qualms about continuing access to unbundled switching, for both economic theory and actual market experience establish that there is little doubt but that CLECs will deploy their own switches as soon as that is technically and economically feasible. In this regard, unbundling switching holds tremendous promise to lead to a world in which multiple CLECs will be broadly and effectively competing with ILECs through separate platforms that CLECs establish through their own switches and that rely on the same underlying loop and transport facilities. The value to consumers is that by focusing on deployment of switches, CLECs can maximize their opportunity to provide new and different calling capabilities rather than on “pipes” that allow for no such differentiation. Experience and economic principles teach that the way to achieve this result is by continuing the availability of unbundled switching and relying on market forces to determine precisely where and when alternatives are deployed. Attempts to micromanage the conditions in which switching will be deployed will be far more likely to defeat the Commission’s goal of facilities-based competition than it would be to further them, and could deny consumers

the benefits of UNE-P competition in the interim.

141. Similarly, because of the value of self-provisioned switching and the impairments that hot cuts create to its use in serving all classes of customers, the Commission should use all the weapons at its disposal to provide the ILECs with incentive to eliminate the need for manual hot cuts by moving to some form of electronic loop cutovers. However, here, too, it would be premature and counterproductive to adopt a rule that eliminates unbundled switching wherever electronic cutovers have been implemented and cost-based EELs are available. The scale economies in switching and the distance-sensitive transport costs can mean that CLECs will be impaired in using switching until they have achieved particular volumes through UNE-P and been able to deploy their own switches. Electronic loop provisioning and uniform EELs will create the conditions that will allow the development of a wholesale switching market that has sufficient capacity to meet needs of multiple CLECs and discipline ILECs, but until that market exists and other necessary conditions develop, switching should be available as a UNE.
142. Finally, for all these reasons, the Commission should eschew any attempt to place time limitations or volume limitations on CLECs' use of unbundled switching in any office. The Commission is quite correct in here recognizing that unbundled switching can be an essential precondition to the deployment and use of the CLECs' own switch to provide service, but there is no reason or basis for the Commission to attempt to micromanage in advance the precise conditions in which UNE-P can be used. The CLECs' own incentives and business interests will cause them to move the customers to their own switches as soon as that is technically and economically feasible. Moreover, the

economic facts that determine where and when it will be feasible for a CLEC to deploy and use its own switch in serving particular customers and particular offices are far too varied, complicated, and multifaceted for the Commission to attempt to capture in a regulatory rule.

143. *Restrictions On EELs.* The Commission should eliminate the use and commingling restrictions that its *Supplemental Order Clarification*, 15 FCC Rcd. 9587 (2000), imposed on a CLECs' right to use the "EEL" loop-transport combination. The Commission's *Supplemental Order* held, on an interim basis, that CLECs have a right to use an EEL only when it provides a "significant amount of local exchange service" to a customer. The *Supplemental Order Clarification* then developed three so-called "safe harbors" that identified situations where this criterion is met. *Supplemental Order Clarification* ¶ 1. Thus, on its face, the purpose of the existing use restriction is to prohibit a carrier from using EELs where it is used exclusively to provide a customer's special access services. Even if the use restrictions functioned as intended – and, as I understand it, they do not – protecting ILEC special access revenues is not a justification for restricting CLECs' access to UNEs.

144. My understanding is that there is no material difference between a high capacity loop and transport combination and ILEC special access service except that UNEs are priced according to TELRIC and that special access services are priced under the Commission's *Pricing Flexibility Order*, 14 FCC Rcd. 14221 (1999). The latter order did not find that ILECs lack market power in providing special access services, but it nonetheless granted them pricing flexibility if certain triggers were met, *i.e.*, that CLECs were using LEC

transport and making some use of transport provided by third parties on some routes.

145. Although the use restriction on EELs benefits ILECs, I can see no public policy justification for it. The Commission's TELRIC methodology "replicates . . . the conditions of a competitive market." *Local Competition Order*, 11 FCC Rcd 15499, ¶ 679 (1996). The object of the Act's unbundling obligation is to allow CLECs to obtain ILEC facilities at such cost-based rates, to use them to offer competing services, and to thereby move "access charges to more cost-based and economically efficient levels" thus minimizing the ILECs' ability to exercise their market power. *Id.* ¶ 716.
146. ILECs have market power over special access services. That is reflected in the Commission's recent statistics showing that CLECs have only 12% of the special access business,³² and in the Commission's pointed refusal to find that ILECs' lack market power in its *Pricing Flexibility Order*. It is also confirmed by the ILECs' admissions that their rates are apparently twice the TELRIC rates of the loop-transport combination. *See* BellSouth's Comments, CC Docket No. 96-98, at 3 (filed Apr. 5, 2001); Comments of Qwest Corporation in Response to Public Notice, CC Docket No. 96-98, at 7 (filed Apr. 5, 2001). Further, since the *Pricing Flexibility Order*, ILECs have used pricing flexibility either to keep special access rates high or to increase those rates even higher.³³ Nor can

³² *See Telecommunications Industry Revenues 2000*, at Tables 5-6, ln.305 (Jan. 2002)

³³ Since mid-2000, BellSouth, SBC, Verizon, and Sprint have each received "Phase II" pricing flexibility in many of the nation's cities for transport and special access services representing \$2.5 billion in annual revenues. *See* Comments of AT&T, CC Docket No. 00-256, at 20 (filed Feb. 14, 2002). The results of this pricing flexibility have been that (1) none of these ILECs has decreased its special access rates in the affected cities, and therefore interexchange carriers have not received \$100 million in X-Factor reductions that they would have received if those \$2.5 billion in revenues had remained under price caps, and (2) BellSouth and Verizon have actually (continued . . .)

ILECs claim that their supra-competitive special access rates are legitimately required to cross-subsidize another service. It is well-established Commission policy that “special access will not subsidize other services” (*Access Reform Order*, 12 FCC Rcd. 15982, ¶ 404 (1997) (emphasis added)), and in any event, § 254 of the Act requires that subsidies be explicit and competitively neutral.

147. The current use restrictions not only deprive CLECs of revenues that can support their local operations, but also appear squarely to “impair” the ability of CLECs to offer *local* telephone services in competition with the ILECs through self-provisioned switches. As AT&T has explained in detail in the Use Restriction Proceeding, the use restrictions have not functioned as intended and CLECs have been denied access to loop-transport UNE combinations even when they are seeking to use them to provide customers with substantial amounts of local services. In fact, I understand that CLECs have been to date unable to move virtually any special access circuits to UNEs even when they are generally providing local service to a customer.³⁴ Thus, except for the narrow circumstance discussed above where ILECs can now offer EELS in order to disqualify a

(. . . continued)

increased their special access rates, which has resulted in increases to AT&T of \$25 million and \$24 million respectively. *See id.* at 20-21 & nn. 17, 18; *id.* Appendix C. BellSouth filed Transmittal No. 608, effective November 1, 2001, increasing Special Access rates for DS3 and DS1 services in MSAs with Phase II pricing flexibility. The filing resulted in an annual rate increase to AT&T of over \$25 million. In addition, Verizon filed Transmittal No. 134, effective January 5, 2002, increasing Special Access rates for DS1 services in MSAs with Phase II pricing flexibility. The filing resulted in an annual rate increase to AT&T of over \$24 million.

³⁴ *See generally* Comments of AT&T Corp. on Use of Unbundled Network Elements to Provide Exchange Access Services, CC Docket No. 96-98, at 18-23 (filed Apr. 5, 2001); Carroll-Rhodes Use Restriction Dec. ¶¶ 10-22.

CLEC from using unbundled switching, CLECs cannot use loop-transport combinations at their economic cost to move traffic from customer locations to their switches or to a central hub where demand can be aggregated using a multiplexer – as the ILEC does. Instead, the CLEC must either (1) incur the additional costs of collocating costs at multiple offices, which materially increases the CLECs' costs, or (2) obtain a loop-transport combination at the inflated special access rate, creating a potential anticompetitive cost squeeze and, in any event, inflating the CLECs' costs.

148. By allowing ILECs to make loop-transport functionality available only as an "access service" – as the Commission's use and commingling restrictions have effectively done – CLECs are otherwise placed upon the horns of a dilemma. In order to justify deploying a switch, CLECs generally need to be able to reach customers spread throughout a broader geographic region than the ILEC's customers. That, of course, means the CLEC must have in place an extensive transport network to connect its customers to its switch – costs the incumbents do not incur because all of the ILECs' loops terminate at their switches – and its transport costs per customer must be close to the ILEC's own internal cost. If, on the one hand, the CLEC considers building its own loop and transport facilities (to avoid the excessive special access rates), the use and co-mingling restrictions make it impossible to justify that construction, because it cannot aggregate its demand efficiently or use UNEs to fill in gaps in its network. If, on the other hand, the CLEC considers using ILEC high cost special access services to provide the necessary transport functionality, the supracompetitive prices for those services force the CLEC's costs above the ILEC's own costs.

149. Finally, I note that the availability of EELs will not solve the hot cut problem for voice grade loops. While EELs will allow a CLEC to avoid collocation costs to access voice grade loops, I understand a hot cut is still required to transfer the loop to a multiplexer.
150. *NGDLC Loops.* Finally, as I explained above, the limitations that the *UNE Remand Order* imposed on access to so-called NGDLC loops should be removed. As I understand it, the limitation rests on the definitional error that packet switching includes certain multiplexing equipment. But quite apart from that error, the restriction prevents CLEC from accessing the high frequency portion of a customers loop in the central office and requires a CLEC to incur costs of collocation in a remote terminal – which is inherently more expensive and, as AT&T's evidence indicates, wholly uneconomic. See Riolo NGDLC Dec. ¶¶ 65-84. The effect is to prevent CLECs from efficiently connecting their own packet switching facilities to loops and from thereby offering not just high speed data services, but also second or third line voice services over the high frequency portion of the loop. I can perceive no conceivable justification for this restriction.

VIII. THERE IS NO BASIS TO ELIMINATE UNBUNDLING REQUIREMENTS FOR FACILITIES USED TO SUPPORT BROADBAND SERVICES.

151. The *Notice* also seeks comment on the ILECs' allegations that unbundling requirements suppress "broadband" investments that they would otherwise make. Regardless of what the Commission does more generally in this proceeding, the ILECs contend that the Commission should, at a minimum, eliminate or modify the unbundling requirements insofar as the facilities in question are used to provide broadband services. The ILEC proposals range from requests that some or all "new" loop infrastructure be exempted

from unbundling requirements to, it seems, requests that unbundling obligations be eliminated altogether for the high frequency portion of all loops – such that CLECs could obtain unbundled loops only to provide narrowband services.

152. Adoption of any version of these ILEC proposals strikes me as exceedingly unwise. A “broadband” exception to unbundling obligations is unlikely to have any material impact on the pace or degree of ILEC investments, and would almost certainly harm consumers and impede competition in the provision of both voice and high speed data services.

A. Removal Of Unbundling Obligations Would Eliminate Broadband Investments By CLECs And Could Not Be Expected To Have A Material Impact On The Pace Or Scope Of ILEC Investment Or Broadband Deployment.

153. There is no basis in economics or in market experience for the allegation that overall broadband investment is suppressed by the requirements that ILECs make unbundled loops and other UNEs available at TELRIC-based rates to firms that would use the facilities to provide broadband services. Rather, it seems highly likely that this requirement has led to greater overall investment in broadband in the past and that it will continue to do so in the future.
154. As an initial matter, it is critical to underscore that the provision of a broadband service to a customer requires the attachment of electronic equipment (*e.g.*, DSLAMs and packet switches) to broadband-capable loops and that, with narrow exceptions, the Commission’s rules require that CLECs self-provision this electronics equipment. There is therefore no question but that the unbundling obligation promotes investment in the electronic equipment and associated facilities required to transform voice grade loops

into broadband, for it allows these investments to be made by CLECs as well as ILECs. Even if ILECs had incentives to promote the widest possible use of broadband, authorizing multiple firms to provide these facilities inherently leads to greater investments than would occur if these rights were limited to ILECs alone. Moreover, as I explain below, ILECs have powerful incentives to suppress the use of broadband, and unbundling obligations therefore plainly promote competition in the provision of, and investment in, broadband electronics. As I noted above, the evidence is that CLECs, to date, have made multi-billion dollar investments to transform ILEC loops into broadband transmission pipes; and these investments appear to have substantially broadened the availability and use of broadband.

155. But the ILECs' investment claims fail even if the inquiry is artificially limited solely to upgrades to the loops themselves. The ILECs claim that there are circumstances in which modifications to their "loop infrastructure" – *e.g.*, installing fiber feeder and DLC and NGDLC upgrades – allow broadband service to be provided more effectively or efficiently, but that the obligation to provide loops at TELRIC-based rates adversely affects their incentives to make these loop infrastructure investments. These claims ignore the established economic understanding of the effects of long run incremental cost-based prices on investment incentives, the overriding economic incentives created by the ILECs' unique market positions, and actual experience under unbundling rules.
156. First, because properly calculated long run incremental cost-based rates are compensatory, competitive-market rates and economics predict that requiring ILECs to lease their loops at TELRIC-based rates will encourage both ILECs and CLECs to make

efficient investment decisions. The Commission found that to be the case when it chose long run incremental cost over historical cost and other proposed bases for UNE pricing, and the Commission's logic remains as sound today with respect to broadband services as it was in 1996 with respect to narrowband services.

157. Second, ILECs use their loop plant to provide an array of services. Economics thus teaches that no meaningful conclusions regarding an ILEC's incentives to invest in and deploy broadband services can be reached by focusing solely on the costs and profits expected from those services. ILECs provide both existing services and new services over the same wires, and the ILECs' investment and deployment decisions are made to maximize total profits, not merely to maximize the use of, or profits from, new services. To the extent that new and old services are, in whole or in part, substitutes, rather than complements, an ILEC may have powerful incentives to delay the roll out of (or charge supracompetitive prices for) a service that would appear profitable when analyzed in isolation. In those conditions, ILEC investment and deployment decisions would be expected to turn primarily on considerations like the need to meet intermodal competition or to make changes that will reduce costs in the provision of all services, and not on any marginal impact created by risk-adjusted TELRIC limits on the rates for unbundled loops.

158. Third, actual experience confirms these economic predictions. The requirement to lease loops at TELRIC-based rates has been in effect for more than six years now, and I am aware of no evidence that it has in any way dampened ILEC incentives to invest in or deploy DSL-capable loops. Indeed, DSL-loop upgrades and ILEC broadband activity

have been most prevalent in areas where UNE activity is the highest and least prevalent in areas where UNE activity is virtually nonexistent. At the same time, the ILECs have clearly been broadband “followers,” rolling out DSL technology only when cable and DLEC broadband offerings began to take a serious bite out of their narrowband (e.g., second line) profits. And, notwithstanding intermodal competition in many areas, the ILECs have raised their prices and now charge significantly more than their broadband competitors, a strategy that is consistent with ILEC expectations that the higher prices will cause more consumers to retain (or switch to) the ILECs’ lucrative narrowband services. In short, actual experience is fully consistent with the predictions that TELRIC-based UNE rates have no material impact on ILEC decisions to invest and deploy new services, but that those decisions are instead driven by much more powerful incentives to maximize profits from both narrowband and broadband services.

159. *Properly Calculated TELRIC-Based Rates Should Not Discourage Efficient ILEC Investment.* To the extent that CLECs obtain unbundled loops to provide DSL-based services, the ILEC receives the TELRIC-based rates for those loops and thus the return on investment that is embedded in those rates. The ILECs claim that TELRIC-based rates are inadequate to justify investments that are of such great magnitude and that entail such risk. However, TELRIC is perfectly capable of accommodating large numbers and high risk, and fundamental economic principles dictate that properly set TELRIC-based rates – which, by definition, reflect a risk-adjusted, competitive market return – will not discourage any efficient investments.
160. TELRIC is a specific application of standard long run incremental cost-based pricing.

Economists have long recognized that where utility prices must be regulated, prices based on long run incremental costs best replicate competitive market conditions and incentives and give both the owners of the facilities in question and those that seek to use those facilities appropriate incentives to make efficient investments. By definition, rates designed to provide a competitive market return – and properly set TELRIC-based rates do just that – will not discourage efficient investment. The Commission has long recognized that long run incremental cost-based pricing provides the proper incentives for efficient investment. *See, e.g., Local Competition Order* ¶ 679. Adding a “broadband” label does not change the governing economic principles or require a new economic model.

161. Long run incremental cost-based pricing is well suited to a broadband environment, and neither the magnitude nor riskiness of particular “broadband investments” in any way precludes its use or undermines its efficacy. The full magnitude of the investments necessary to provide a certain level of service quality should be reflected in any properly determined TELRIC estimate of loop costs. Thus, to the extent that an efficient broadband-capable loop infrastructure costs more to build than an efficient narrowband loop infrastructure, TELRIC-based loop prices for an ILEC that offers broadband capable loops would be higher than TELRIC-based loop prices for an ILEC that does not, and CLECs who offer DSL-based services would then pay higher rates for the loop than CLECs that provide only voice grade services.
162. In fact, I understand that the efficient narrowband loop infrastructure modeled by today’s TELRIC cost models (including the Commission’s Synthesis Model) and used to set

voice-grade loop rates reflects “clean” loops (*i.e.*, loops without bridge taps and load coils) with no more than 18,000 feet of copper. While this is a voice-grade facility, I understand that such a network can support some basic grade of DSL-based service to *every* customer if modest investments are made to add a ADSL line cards to their POTS line cards that are used in the DLC equipment that is assumed by the Commission’s Synthesis Model. If that is so generally, then existing UNE rates may already largely reflect the investments necessary to provide current generation broadband services.

163. The ILECs’ argument that unbundling requirements do not provide for the return of the capital they must invest to increase available bandwidth is made by comparing the incremental investments required to upgrade their existing embedded voice grade loops to make them DSL-capable with the incremental revenues that they would earn from retail services. But that comparison is too narrow. These investments also result in cost savings and enhanced revenues (or reduced lost revenues) for the ILECs’ “retail” services and they allow the ILECs to charge higher rates for the unbundled loops that will be used to offer DSL-based services. Contrary to the ILECs’ claims, there is simply no reason why TELRIC rates cannot be structured to reflect all efficient investment undertaken to improve loop bandwidth/performance – regardless of the magnitude of those investments.
164. TELRIC fully takes into account the risks that ILECs incur to upgrade facilities to allow new services that have demand that may be uncertain and that will be offered in more competitive environments. To the extent that investments in broadband infrastructure are riskier or to the extent that new equipment can be expected to become obsolete more quickly today than in the past, a straightforward application of TELRIC would justify that

UNE rates charged to CLECs using upgraded loops to provide broadband services reflect a higher rates of return (reflected in the cost of capital component of the cost estimate) and higher depreciation rates for the DSL-capable loops.

165. Although TELRIC does not afford ILECs an “unbounded” return, it provides them with a return that reflects all the risks that ILECs face in operating under TELRIC and in today’s market. For these reasons, the ILECs plainly have not supported their claims that TELRIC-based rates will necessarily fail adequately to compensate them for upgrades (even assuming such upgrades actually result in higher costs), and, without more, I see no basis for assuming that a requirement to lease UNEs at risk-adjusted competitive market rates will discourage any efficient ILEC investments.
166. Certainly, no such assumption could reasonably be grounded in speculation that TELRIC will not be up to the task of dealing appropriately with some unspecified, future types of investments. I believe that the Commission should fashion its current unbundling rules in light of the conditions that exist in the marketplace today or are expected in the near future and the investment that ILECs are in fact making or might make to meet consumer demand. In particular, because the consumer demand for broadband appears quite limited and because there appears clearly to be no immediate prospect for significant deployment of the much-discussed “fiber to the curb” systems, there appears to be no reason even to consider it in determining what unbundling obligations are appropriate today. But I note in passing that, if there were such demand, the duty to lease the all fiber loops at TELRIC-based rates should have no material effect on the incentives of an ILEC to install such loops. Because they would have unique bandwidths (of multiple

gigahertz), higher UNE rates for CLECs using these capabilities and offering broadband services would be warranted that would reflect all the costs and risks of the investments. Indeed, "fiber-to-the-curb" systems would entail extending fiber to individual subscribers, and the investments in question would appear to be targeted to individual customers and to occur incrementally only in response to specific demand. Thus, the risks that unbundling rules could inhibit these very hypothetical investments appear peculiarly insubstantial.

167. *ILECs' Broadband Investment And Deployment Decisions Are Not, In Any Event, Made To Maximize The Use Or Profitability Of Broadband Services, But Are Instead Driven By Systemwide Efficiency And Profit Maximization Considerations.* Even if one were to conclude that TELRIC-based unbundling would materially affect the expected profitability of ILEC broadband services, one could not conclude that TELRIC-based unbundling would materially affect the pace or scope of ILEC investment. The reality is that ILEC decisions whether to invest in or market a new service do not turn on the profits expected from that service alone, but rather on the ILEC's expected overall profits from all services. All of the ILECs' services are provided over the same facilities, and this has two very important impacts on ILEC decision-making.
168. First, some investments in loop infrastructure may produce cost savings (e.g., in lower maintenance expenses) that improve the profitability of all services, not just the feasibility (or profitability) of providing a new or improved broadband service. Second, particularly as technologies and services continue to converge, it will frequently be the case that the bulk of the potential customer base for a new or improved ILEC service is

likely to come from purchasers of the ILEC's existing services, so that many customers that buy the new or improved service will drop the existing service. These factors can significantly skew ILEC incentives to invest in a new or improved service – in the first case, encouraging investment that appears unprofitable if only the new or improved service is considered, and, in the second case, discouraging investment that appears profitable if only the new or improved service is considered. If the impacts of these ILEC-specific incentives are strong, they may swamp any possible impact of TELRIC-based unbundling requirements.

169. There is substantial evidence that the impacts of these ILEC-specific incentives are quite strong indeed. With rare and trivial exceptions, for example, it would appear that the loop investments needed to enable both current and next-generation broadband services are independently justified by the maintenance and other savings that the ILECs will realize in their provision of voice and other narrowband services.
170. SBC's Project Pronto, which SBC and others have cited as the "poster child" for the claim that unbundling requirements deter investment, is a good example. Two facts about Project Pronto are critical. First, as SBC has stated, this "network architecture is designed to be optimum from both a voice and data perspective."³⁵ The upgraded loops carry both voice and data, and, as noted, additional facilities (*e.g.*, a packet switch and splitter) must be attached to the loop to allow it to offer DSL. Second, by all accounts,

³⁵ SBC Investor Briefing, *SBC Announced Sweeping Broadband Initiative*, at 2 (Oct. 18, 1999) ("*Project Pronto Announcement*"). Project Pronto also includes investments to improve the efficiency of "tandem and interoffice network." These latter investments represent \$1.8 billion of the \$6 billion. *Id.* at 4.

the loop investments at issue are – as a class – justified on a short run incremental basis solely by enhanced efficiencies that they will produce for SBC’s provision of voice services and irrespective of whether DSL-based service is offered over the loop plant at all. When SBC announced its Project Pronto, it described the project as including \$6 billion investments in network investments, 75% of which “will be directed to [these] improvements in the basic loop infrastructure” (*i.e.*, fiber feeder and next generation remote terminals) and 25% of which “will fund other infrastructure improvements, especially in the tandem and interoffice network.” SBC stated that the “capital and expense savings” will total \$1.5 billion “annual[ly]” by 2004 and themselves will “pay for the entire initiative on NPV [net present value] basis” – *i.e.*, irrespective of opportunities for increased DSL revenues.³⁶ As SBC explained:

Expense Savings.

The new loop infrastructure, with the additional dedicated feeder capacity the fiber provides, will substantially reduce the need to rearrange outside plant facilities when installing new or additional services. By avoiding dispatches on many installations, SBC expects to realize efficiencies in its installation and maintenance operations. Other anticipated efficiencies will come from reduced activity required in the remaining copper plant because of improved reliability. A fiber-based distribution network is expected to be less vulnerable to weather conditions, thereby reducing trouble reports.

In some cases SBC is making investments in new technologies to dramatically reduce the cost of supporting future growth. A good example is the company’s plan to move most of its copper-based DS1s to fiber at certain locations. With the fiber in place, the cost of providing additional bandwidth via electronics will be significantly less than adding more copper lines. Reducing the number of copper-based DS1s has the added benefit of eliminating

³⁶ *Id.* at 2.

a source of interference, which will make more the remaining copper-based facilities available for DSL service. In other cases, such as the plan to replace existing circuit-switched tandems with new fast packet technologies, costs associated with future growth as well as maintenance expenses will be reduced.

Capital Savings.

Savings in capital expenditures for feeder, trunking and provisioning are targeted as a result of the network investments. Reduced spending on feeder facilities represents 70 percent of the targeted capital savings. The broad deployment of fiber and related electronics will substantially eliminate further deployment of copper facilities for feeder reinforcement. The balance of the capital savings comes from the reduced need for trunking capital, from lower provisioning costs for high-growth services, such as DS1s, and from other improvements in the distribution plant.³⁷

171. Where infrastructure investments are independently justified solely by the resulting savings in provision of existing voice and other services, there is not even a colorable claim that the Commission need afford the ILEC an opportunity for an unbounded return from DSL to provide “incentives” for these investments to be made. In this regard, it is quite revealing that – after making these statements – SBC threatened regulators that it would cancel Project Pronto unless SBC is relieved of its unbundling obligations. As the Chairman of the Illinois Commerce Commission has aptly stated, only a monopolist could threaten to withhold infrastructure improvements that will be paid for entirely by efficiencies and savings in existing services.³⁸

172. Further, I note the obvious fact that ILECs will have incentives to make loop infrastructure investments even when they will not be justified solely by efficiency and

³⁷ *Id.* at 7.

³⁸ Shawn Young, Yochi Dreazen and Rebecca Blumenstein, *How Effort to Open Local Phone Markets Helped the Baby Bells*, Wall Street Journal, A1 (Feb. 11, 2002)

cost savings in the provision of voice services. For example, I understand that there are circumstances in which making loops DSL-capable requires using linecards to retrofit voice-only DLC electronics in remote terminals on fiber feeders to make them capable of providing high speed data services. The incremental investments are apparently small in amount, but there may be circumstances in which even such small investments will not be justified today solely by efficiency savings. Yet the investments will still be made when the overall benefits for the ILECs – from cost savings, from avoiding or minimizing present or future losses of second line revenues to cable modem services, and from incremental revenues – exceed the incremental cost of investments. Because of the threat that cable modem service makes to ILECs' second line revenues, investments to enhance the offering of DSL-based services will be made in response to the cable threat, and no plausible economic case has been made that the duty to provide UNEs to firms that will offer DSL-based services over them can materially reduce the rate of these investments by ILECs.

173. That raises the other, and perhaps even more important, influence on ILEC decision-making in this area. It is critical to understand that ILECs do not have incentives to invest in broadband whenever and wherever they could expect to earn revenues from broadband services that provide a market return on that investment. ILECs are entrenched monopolists, and it is well documented in the economic literature that monopolists will not invest the full amounts required to allow the offering of services that efficiently meet consumer demand. In particular, when new technology will undercut the value of the monopolist's existing assets, the monopolist will resist investing in it, and if

it is forced to do so, the monopolist will seek to slow its introduction and use.

174. This has been and is consistent with the behavior of the ILECs. Today's DSL (like the earlier ISDN) are technologies that increase the bandwidth of the local loop and that allow voice and higher speed data transmission to occur simultaneously over a single line. As such, these services eliminate the need for many customers' second telephone lines, which are extremely lucrative services with, according to the same evidence, margins of 70% or more. Willig LEC BB Dec. ¶ 85. DSL-based services can also be a lower cost substitute for T1.5 services used by many business customers. These facts mean that, irrespective of whether ILECs can earn broadband revenues that will justify incremental broadband investments, ILECs will not make the investments if that would "cannibalize" their narrowband second line profits and reduce their overall profits from the narrowband and broadband services that are both offered over their local bottleneck facilities.
175. These facts have meant that ILECs have made broadband investments only in reaction to services that others offered threatening the ILECs' second-line revenues. In particular, although I understand that ISDN and DSL technologies could have been commercially deployed much earlier, the ILECs never really rolled out ISDN technology. They introduced DSL technology only after cable operators began operating their high speed cable modem services – and also after the so-called "data CLECs" (*e.g.*, Covad, Rhythms, NorthPoint) began offering DSL-based services by attaching their own electronic equipment to loops leased from ILECs. Willig LEC BB Dec. ¶ 140. In this regard, the Cable Bureau has noted that ILECs did not offer DSL earlier "for concern that

it would negatively impact their other lines of business” (Cable Services Bureau, *Broadband Today*, Report No. CS 99-14, at 27 (Oct. 1999)) and the Commission has stated that “the expansion of DSL in the past two years by incumbent LECs is primarily a reaction to other companies’ entry into broadband” (*AOL-Time Warner Merger Order*, 16 FCC Rcd. 6547, ¶ 113 (2001)).

176. Also, since DSL was introduced, there is evidence that ILECs have priced it at artificially high levels in order to maximize the ILECs’ overall profits from their narrowband as well as broadband services. I have set forth this evidence in some detail in the affidavit I filed in CC Docket No. 01-337. Because I understand that this docket and Docket No. 01-337 will be considered together, I will summarize this evidence here, with citations to my other affidavit.
177. The ILECs initially priced their lowest speed DSL-based service so that ISP services that used this DSL had costs comparable to cable modem service. Higher speeds of DSL were priced substantially above cable modem service. Beginning in 2000, CLECs increasingly became subject to practical, economic, and in some cases Commission-imposed legal limits on their ability to provide DSL-based services. In 2001, two of the three major data CLECs (Rhythym and NorthPoint) went out of business, and the third (Covad) was reorganized in bankruptcy and emerged partially owned by SBC. As a result, the ability of CLECs to offer DSL-based services was severely limited. Willig LEC BB Dec. ¶ 98. The ILECs responded by raising their prices by 25% and ending the prior practice in which their retail services that used the lowest speed Internet access service had been priced at the same level as cable modem. *Id.* ¶¶ 99-105. This strategy

was profitable presumably because (1) many customers kept ILEC high speed Internet access service because they valued obtaining broadband from their provider of local voice service and (2) while many customers dropped ILEC high speed Internet access service (or did not buy it in the first place), substantial percentages of these switched back to (or retained) the ILECs' higher margin narrowband second telephone lines. *Id.* ¶¶ 111-13. Notably, the ILECs increased their prices at the same time that prices for DSL-based services in other countries were falling dramatically. *Id.* ¶¶ 107-08.

178. In addition to showing how CLECs' offerings provide a very important constraint on ILEC behavior, this evidence underscores that ILECs' investment in broadband are driven not by a prospect of earning maximum return on discrete broadband investments, but on maximizing profits and returns from the totality of narrowband and broadband services offered over their local bottlenecks. Even then, broadband investment has been driven by the threat that cable operators provide to the ILECs' second telephone line and related revenues. Thus, ILECs will make infrastructure investments whether or not they can earn unbounded returns on investments that are deemed to relate only to broadband. ILECs have always been followers, not leaders, in deploying advanced services, and there is no reason to expect either their incentives or their behavior to change, regardless of the extent of their unbundling obligations.

179. A careful analysis of ILEC incentives confirms the artificiality of any attempt to treat the ILECs' broadband "infrastructure" investments differently from their other related investments. The ILECs' investments inherently apply to facilities that provide both narrowband voice and data. The investments are generally independently justified solely

by efficiencies and savings in the provision of ILECs' voice and narrowband services, and appear always to be justified in part by these savings. The investments will be made to protect ILECs' narrowband revenues and allow ILECs to shift narrowband customers to broadband. And the investments mean that ILECs can receive higher UNE rates under TELRIC for all purchasers of unbundled loops, regardless of whether they are used for narrowband voice or DSL-based services.

180. *Actual Experience Underscores That Unbundling Duties Have No Affect On Loop Investment For Broadband.* The ILECs' actual behavior underscores that unbundling duties are having no adverse effect on their loop infrastructure investments that allow DSL to be offered more broadly or more efficiently. Notwithstanding the obligation to provide access at TELRIC-based rates, ILECs have made quite substantial investments. For example, the Commission has stated that "[i]n 2000, [ILECs] invested almost \$29.4 billion in infrastructure," and that a "substantial portion" of the investment was to allow "high speed or advanced data services" to be offered more broadly. *See Third Section 706 Report*, 17 FCC Rcd. 2844 ¶ 69 (2002). As a consequence of these investments, Verizon says that high-speed service can be offered on 79% of its access lines,³⁹ and BellSouth states that this will also be so for 76% of its customers by year-end, up from 45% in 2000.⁴⁰ SBC reports that it has expanded its DSL-capable footprint by 37% to 25

³⁹ See News Release, *Verizon Communications Reports Solid Results for Fourth Quarter, Provides Outlook for 2002* (Jan. 31, 2002).

⁴⁰ See News Release, *Bell South Captures 620,500 DSL Customers and Deploys Broadband Capabilities to More Than 15.5 Million Lines* (Jan 3, 2002).

million customers in 2001 alone.⁴¹

181. This has also been reflected in growth rates for DSL-based services. It has been reported that “The proliferation of DSL in the telecom industry has seen one of the fastest technology adoption rates ever recorded.”⁴² Whereas there were only 50,000 DSL subscribers in the U.S. in 1998, there were over 3.5 million by the end of 2001.⁴³ And the growth continues, as DSL-based services posted record gains in the fourth quarter of 2001,⁴⁴ despite the ILECs’ 25% price increase. Verizon reports that its DSL subscriptions increased 122% in 2001 and that the company expected another 50-75% increase in 2002. Similarly, Qwest announced a 77% increase in DSL customers in 2001, and SBC announced a 69% increase.⁴⁵

182. Thus, it seems to me that there is no basis for a finding that the unbundling requirements

⁴¹ See *id.*

⁴² Robertson Stephens, *DSL Market: Demand Doesn't Seem To Be An Issue, But Carrier Deployment Execution Does* (January 3, 2001).

⁴³ See Morgan Stanley, *Residential Broadband Update*, at 33 (Dec. 28 2001); see also Press Release, *Federal Communications Commission Releases Data on High-Speed Services for Internet Access*, at 2 (Aug. 9, 2001) (noting that the number of DSL lines grew 435% to two million lines in 2000); *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, Third Notice of Inquiry, CC Docket No. 98-146, ¶ 16 (Aug. 10, 2001) (“[T]he number of ADSL subscribers is growing faster than the number of cable subscribers.”); *id.* ¶ 20 (“[T]he data also show continued rapid growth by all technologies, with ASDL gaining significantly on cable’s lead.”).

⁴⁴ *DSL Posts Record Gains During Q4, Broadband Daily* (Feb. 4, 2002); see also *Communications Daily* (Feb. 13, 2002) (reporting that “U.S. DSL lines totaled 4.4 million at end of year, up 542,000 [or 14%] from end of 3rd quarter”)

⁴⁵ See News Release, *Qwest Communications Reports Fourth Quarter, Year End 2001 Results*, Jan. 29, 2002; News Release, *SBC Reports Fourth-Quarter Earnings* (Jan. 24, 2002).

have inhibited broadband investments by ILECs in the past or that they could in the future, much less over the next three years. Despite the ILECs' economic disincentives to offer broadband, the investments are being incited by (1) the efficiencies and savings that result in narrowband voice services (which independently justify all or virtually all investments), (2) the revenue losses that can be thereby avoided to cable operators (and the few remaining data LECs) and potential for new revenue sources, and (3) the increased UNE rates that the investments allow UNE purchasers using the upgraded capabilities of the loop to be charged.

B. Eliminating Unbundling Obligations Would Foreclose Voice And Broadband Competition.

183. But even if unbundling obligations could be shown to have some marginal negative impact on the investment in, and roll out of, new broadband services, that could not justify a broadband exemption to the ILECs' unbundling obligations, because the costs associated with any such exemption would be extraordinarily high. In particular, quite apart from its effects on the category of "broadband" services, eliminating the unbundling requirement for facilities that offer "broadband" would impair the fundamental objective of fostering competition in voice and other exchange services generally.
184. In particular, preventing CLECs from using UNEs to provide "broadband" services would also have an increasingly negative impact on the ability of CLECs to offer competitive voice services. As noted, both voice service and DSL service reach customers over the same copper wires. The local loop, of course, remains a

“quintessential bottleneck facility for competing telecommunications carriers.”⁴⁶ And, as the Commission has recognized, absent existing common carrier regulations, incumbent LECs could use their control over the local loop to “perpetuate their monopolistic dominance of existing” voice markets.⁴⁷

185. More specifically, CLECs would be at a severe and increasing competitive disadvantage in providing *voice* services if they cannot also offer data services in combination with voice services. Some carriers already offer bundled packages that include both local phone service plus DSL, and these packages are likely to become even more common in the future.⁴⁸ As The Yankee Group has pointed out, “[p]roviders are using bundles to expand control over the communications value chain and capture share of the higher value customers.”⁴⁹ Within the industry, it is widely believed that a bundled package is “a ‘stickier’ offering that is likely to remain in place in the face of competition.”⁵⁰ Qwest’s studies have shown that a bundle including high speed Internet access reduces churn by a factor of four.⁵¹

⁴⁶ FCC Brief for Respondents at 22, *WorldCom, Inc. v. FCC* (D.C. Cir. filed Nov. 2, 2000) (No. 00-1002) (“*FCC WorldCom Brief*”).

⁴⁷ *Id.*

⁴⁸ For example, Qwest is already offering a “Connected Home” bundle that includes DSL, a residential phone line and 20 popular calling features (such as Caller ID) for \$72.90 a month. Raymond James, *Qwest Communications Intl.*, at 20 (Dec. 10, 2001) (“*James Qwest Report*”). Analysts predict that such bundling will become increasingly popular. See, e.g., Forrester Research, Inc., *Broadband Opens the Door for Bundles* (March 30, 2001).

⁴⁹ The Yankee Group, *Assessing the U.S. Residential Communications Landscape: New Strategies, New Opportunities*, at 3 (Nov. 14, 2001).

⁵⁰ *James Qwest Report* at 20 (Dec. 10, 2001).

⁵¹ Dresdner Kleinwort Wassestein Research, *Qwest Communications*, at 30 (Nov. 12, 2001).

186. CLECs need to have the same ability to offer bundles of voice and high speed Internet access using DSL technology over the same line. Indeed, for a CLEC, such a bundled offering may hold out the best (and perhaps the only) hope of profitability. Given the high cost of using ILEC bottleneck facilities, local entry may not be viable *at all* unless entrants have the same ability as the incumbents to offer voice and data over a single line. The Commission correctly pointed out that “lack of access to the high frequency portion of the local loop would materially raise competitive LECs’ costs of providing DSL-based service to residential and small business users, delaying broad facilities-based market entry, and materially limiting the scope and quality of competitors’ service offerings.” *Line Sharing Order*, 14 FCC Rcd. 20912, ¶ 25 (1999). Analysts have made the same point: DSL carriers must have the ability to bundle services to offer the cost-cutting advantages of having all products – data, voice, and Internet access – over a single copper line. A carrier’s success will ultimately be determined by its ability to deliver local, long distance, and Internet access over the same pipe.⁵²
187. Other evidence confirms that the ability to offer multiple services over leased loops is critically important to the economics of UNE-based entry. As explained in the declaration of Mr. Huels, given the high UNE rates in many states, voice-only offerings simply are not economically viable. Thus, prohibiting CLECs from offering broadband services to customers served with UNEs would have the unintended effect of further insulating the ILECs’ voice monopolies from competition.

⁵² Goldman Sachs Investment Research Report, *The Race to Build the Broadband Kingdom*, at 26 (Aug. 12, 1999) (“*Goldman Sachs Report*”).